Hawaii Pilot Project to Build a National Early Warning System for Invasive Species

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PROJECT DESCRIPTION: Any organism, intentionally or unintentionally, introduced into a habitat other than the one it evolved in has the potential to cause environmental and economic damage and/or harm to human health. Such species are generally referred to as invasive, alien, exotic, nonindigenous, and/or a nuisance and are second only to habitat destruction in causing a decline in biodiversity. Invasive species affect all regions of the United States and every nation in the world. In the United States alone there are approximately 50,000 exotic species with those numbers increasing every day. The major environmental damages, losses, and control measures add up to more than $138 billion per year and invasive species impact nearly half of the species currently listed as threatened or endangered under the US Federal Endangered Species Act. The rapid global expansion of maritime transport, hull fouling and ballast water releases of ships, aquaculture, the aquarium trade, the import of species as biological control agents, live bait, and for scientific research all facilitate the introduction of exotic species to habitats.

The Early Warning System for Invasive Species web site will begin as pilot project in the state of Hawaii to develop and test a national system. The web site will offer coastal resource managers and scientists an interactive tool to obtain the latest information on and verify new sightings of native and non-native US coastal marine species.

- The primary objective of the web site is to provide resource managers an early warning of the introduction of a potentially invasive species. This will be accomplished by comparing newly collected data with a pre-existing baseline list of US coastal marine species. In the event that a newly collected specimen is not listed as established in that geographical region, then a warning will be automatically posted on the web site homepage.

- The second objective is to facilitate communication among the invasive species community, especially between managers and invasive species experts. The web site will provide managers, scientists, and taxonomists the ability to register on-site, document non-native species sightings, verify identifications of species that may be new to a region with taxonomic experts, obtain information on non-native species by biogeographic region, and share management successes and failures in controlling invasive species.

- The third objective is to develop the querying and operational functionality of the underlying pilot database, test the efficacy of the Early Warning System, and evaluate

the utility of a national web site to coastal resource managers. Modifications will be made as the pilot is developed and regional databases are added to tailor the system to its clients and achieve overall robustness of the web site.

This early warning system will provide coastal resource managers a valuable head start to begin eradication measures to reduce potential impacts from invasive species.

PROGRESS TO DATE: This pilot project is in its initial stages of development. Partners are coalescing electronic data sets of disparate Hawaiian collections into consistent lists of species by taxa (e.g., mollusks, fish, algae) databases that will be quality-assured and integrated within the year to build the baseline list of coastal marine species. One or more contracts will be awarded to begin build the system and web site.

FUTURE PLANS: It is envisioned that this pilot project is the first in a series of acquisitions of regional data sets that collectively will list all native and non-native species identified from US the coastal waters of US states, territories, and possessions; thereby, building a national early warning system. Both the Hawaii Pilot Project and the ultimate national early warning system for invasive species is a needed, innovative bioinformatics product with a broad partnership/client base that will be of great potential benefit to the nation.